

METHOD AND APPARATUS FOR EFFICIENTLY IMPLEMENTING A LAST-IN FIRST-OUT BUFFER

ABSTRACT

One embodiment of the present invention provides a system that implements a last-in first-out buffer. The system includes a plurality of cells arranged in a linear array to form the last-in first-out buffer, wherein a given cell in the interior of the linear array is configured to receive get and put calls from a preceding cell in the linear array, and to make get and put calls to a subsequent cell in the linear array. If the given cell contains no data items, the given cell is configured to make a get call to retrieve a data item from the subsequent cell. In this way the data item becomes available in the given cell to immediately satisfy a subsequent get call to the given cell without having to wait for the data item to propagate to the given cell from subsequent cells in the linear array. If the given cell contains no space for additional data items, the given cell is configured to make a put call to transfer a data item to the subsequent cell. In this way, space becomes available in the given cell to immediately satisfy a subsequent put call to the given cell without having to wait for data in the given cell to propagate to subsequent cells in the linear array.